

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF APPEALS AND INTERFERENCES

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In re Application of:

BONG-JIN LEE *et al.*

Serial No.: 08/876,179

Filed: 13 June 1997

For: A HARD DISK DRIVE WITH CONNECTORS THAT SIMPLIFY ASSEMBLY (as amended)



Examiner: GUSHI, ROSS

Art Unit: 2833

Appeal No.

#28
Appeal
Brief
FJONES
10-27-00

Attn: Board of Patent Appeals & Interferences

APPEAL BRIEF

Assistant Commissioner

for Patents

Washington, D.C. 20231

Sir:

Pursuant to applicant's Notice of Appeal filed on 22 May 2000, applicant hereby appeals to the Board of Patent Appeals and Interferences from the final rejection of claims 1 through 8, and 10 through 18, in the final office action mailed 20 January 2000 (Paper No. 22), and from the denial of Request for Reconsideration (Paper No. 24), mailed 27 April 2000.

Folio: P54596

Date: 10/23/00

I.D.: REB/RHS/kf/nah

I. REAL PARTY IN INTEREST

Pursuant to 37 CFR §1.192(c)(1)(as amended), the real party in interest is:

SamSung Electronics Co., Ltd.
#416, Maetan-dong, Paldal-gu
Suwon-city, Kyungki-do, Republic of KOREA

as evidenced by the assignment executed by the inventors on 30 June 1997 and recorded in the U.S. Patent & Trademark Office on 31 July 1997 at reel 8806, frames 0591.

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals and interferences known to appellant, appellant's legal representatives, or assignee, which will directly affect, be directly affected by, or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

Claims 1 through 8 and 10 through 18 are pending in this application. All claims were finally rejected in a final office action (Paper No. 22). Reconsideration was then denied (Paper No. 24).

IV. STATUS OF AMENDMENTS

An amendment under 37 C.F.R. §1.116(b) is filed simultaneously with this Brief, and the proposed amendments of claims 1, 6 and 12 are presented in the Appendix II hereto. Claims 1, 6, and 12 are amended to correct minor typographic errors and to conform the claims to the specification as filed. First, at one point during the prosecution, the word “head/” was incorrectly deleted from “head/disk assembly,” although the specification, pp. 5-8, consistently uses this term as do the original claims. Second, punctuation errors and a mislocated “and” are corrected. Appendix I presents all of the claims as finally rejected.

V. SUMMARY OF INVENTION

The invention of the appellant (hereinafter “Lee”) is a hard disk drive connector apparatus for joining together two pairs of connectors for, respectively, a printed circuit board controlling the hard disk drive (“controller printed circuit board”) and a second printed circuit board for the head-disk assembly of the hard disk drive. The invention provides connectors that automatically electrically couple the hard disk drive and the controller printed circuit board when the head-disk assembly and the flexible printed circuit board are joined together. The

invention thereby eliminates the need for further manual manipulation of these parts during the manufacture of the hard disk drive, as was needed with prior art devices.

VI. ISSUE

The ultimate issue in this case is whether the Examining Staff established that the claimed subject matter would have been obvious to a person of ordinary skill in the art. In the context of this case, this issue has the following pertinent issues comprehended within it:

1. Whether the final rejection is defective because it failed to establish any teaching, motivation, or suggestion in the prior art to combine the cited references.
2. Whether the final rejection is defective because no findings were made on ordinary level of skill in the art, and the record lacks substantial evidence that could support such findings if they had been made.
3. Whether the Examining Staff misapplied the law as to whether the principal reference "teaches away" from the invention.

VII. GROUPING OF THE CLAIMS

For purposes of this appeal, each of the appeal claims respectively stands or falls with its corresponding independent claim, claims 1, 6, or 9.

VIII. ARGUMENT

Introduction

All claims were rejected under 35 U.S.C. § 103 as obvious over Yumibe and the admitted prior art; or, in the case of claims 5, 11, and 13, that art combined with Schuder; or, in the case of claim 16, that art combined with Broschard. Lee submits that several independent reversible errors occur in the final rejection, any one of which *by itself* would necessitate the board's reversal of the rejection.

First, the rejection contains inadequate analysis, that fails to meet the current standards of the Board and the Federal Circuit for a § 103 rejection. The analysis fails to contain specific findings of a suggestion or motivation in the prior art for the combination of references relied upon. Instead, the Examining Staff used Lee's disclosure as a template to make a hindsight reconstruction of the invention based entirely on Lee's specification. Not only are there no findings on suggestion and motivation, but the record lacks substantial evidence on which such findings could have been based if they had been made.

Further, the final rejection relies on allegedly ordinary skill in the art, but the rejection lacks findings on what is the level of ordinary skill in the pertinent art; the record lacks substantial evidence on the level of skill in the pertinent art, on which

findings, if they had been made, could have been based; and the rejection does not even identify the pertinent art.

In addition to these errors in administrative law, the final rejection misapplies the law on “teaching away” and misreads the principal reference (Yumibe). Yumibe, on which the Examining Staff sought to rely for the conclusion that Lee's invention is obvious, clearly teaches that one should use a different kind of connector instead of the conventional connector that Lee uses; Yumibe thus teaches that the conventional device Lee adapts and uses is unlikely to work to overcome the problem Lee has solved, and that a non-conventional connector of Yumibe's design should be used. The Examining Staff misapplies precedent in asserting that Federal Circuit case-law holds that such a teaching not to use a device is nonetheless not within the “teaching away” doctrine.

A. The Final Rejection Lacks a Proper Analysis Based on Suggestion and Motivation in the Prior Art.

The rejection is based on a combination of references. The alleged basis for the combination is different for different groups of claims, but in each case the stated basis is insufficient. For claim 1, for which Yumibe is combined with admitted prior art, the stated rationale (Paper No. 22, p. 3) for causing the contact connector to automatically engage the contacts, per combining prior art and

Yumibe, is: “The suggestion or motivation for doing so would have been to optimize space utilization and minimize the space between the adjacent boards, as taught by Yumibe (see col. 1, lines 19-21, 40-45).” The cited passage states that it is desirable to minimize the space between boards. But this reference says nothing about minimizing space by causing a connector to automatically engage a contact.

For claim 18, the stated rationale (*id.* at 4-5) for changing the shape of the terminals to a C-shape is: “The suggestion or motivation for doing so [to combine Yumbe and Schuder with the admitted prior art to arrive at a C-shape] would have been a matter of design choice depending on for example the stiffness and elasticity of the material used for the terminal.” The Final Rejection cites no art teaching or suggesting that the shape of a terminal is merely a matter of design choice or even mentioning stiffness or elasticity in this regard.

For claim 16, the stated rationale (*id.* at 5) for changing the terminals' shapes to a V-shape is: “The suggestion or motivation [to combine Yumibe and Broschard with the admitted prior art to arrive at a V-shape] would have been a matter of design choice depending on for example the stiffness and elasticity of the material used for the terminal.” Again, the Final Rejection cites no art teaching or suggesting that the shape of a terminal is merely a matter of design choice (here an

alleged mere design choice, but for a *different* shape than before) or citing any reference, even mentioning stiffness or elasticity in this regard.

Lee specifically challenged below the failure to cite a proper suggestion or motivation in the prior art. See Paper No. 22, the Final Rejection, at p. 5, purportedly responding to Lee's challenge.

Before the PTO may combine the disclosures of two or more prior art references in order to establish *prima facie* obviousness, there must be some suggestion for doing so, found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. *In re Dembiczaik*, 175 F.3d 994, 999, 50 U.S.P.Q.2d 1614 (Fed. Cir. 1999)(teaching or motivation or suggestion to combine is an “essential evidentiary component of an obviousness holding”); *In re Rouffet*, 149 F.3d 1350, 1355, 47 U.S.P.Q.2d 1453 (Fed. Cir. 1998); *In re Chu*, 66 F.3d 292 (Fed. Cir. 1995); *Heidelberger Druckmaschinen AG v. Hantscho Commercial Prods., Inc.*, 21 F.3d 1068, 1072 (Fed. Cir. 1994)(“When the patented invention is made by combining known components to achieve a new system, the prior art must provide a suggestion or motivation to make such a combination.”); *In re Jones*, 958 F.2d 347, 351, 21 U.S.P.Q.2d 1941, 1943–44 (Fed. Cir. 1992); *In re Fine*, 837 F.2d 1071, 1074, 5 U.S.P.Q.2d 1586, 1589–90

(Fed. Cir. 1988); *In re Geiger*, 815 F.2d 686, 688 (Fed. Cir. 1987); *ACS Hosp. Sys., Inc. v. Montefiore Hosp.*, 732 F.2d 1572, 1577, 221 U.S.P.Q.2d 929, 933 (Fed. Cir. 1984).

“Combining prior art references without evidence of such a suggestion, teaching, or motivation simply takes the inventor's disclosure as a blueprint for piecing together the prior art to defeat patentability.” Doing that is “the essence of hindsight.” *In re Dembiczak*, 175 F.3d 994, 999, 50 U.S.P.Q.2d 1614 (Fed. Cir. 1999). The showing must be “clear and particular.” Broad conclusory statements, which is all that this record contains, standing alone are not legally sufficient. *Id.* There must be “particular findings regarding the locus of the suggestion, teaching, or motivation to combine the prior art references.” *Id.* at 1000. The PTO must explain, as it did not do here, what specific understanding or technical principle would have suggested the combination of references. *Id.*; *In re Rouffet*, 149 F.3d 1350, 1357, 47 U.S.P.Q.2d 1453, 1459 (Fed. Cir. 1998). The instant Final Rejection's broad statement (without citation to a textbook or other reference) that designing a structure in a particular way (first a C-shape and then a V-shape) is merely a matter of design choice, as here, is no substitute for the kind of reasoned analysis that the Federal Circuit demands.

It was the duty of the Examining Staff to make a proper record below, to establish a *prima facie* case. It is too late now to do that, for the record is closed. Lee no longer has any opportunity to learn what are the alleged elements of a *prima facie* case (if one could in some way be made here) and then factually rebut such elements. To try to create a *prima facie* case for the first time on appeal would ambush Lee, contrary to the APA and due process.

B. The Final Rejection Lacks Findings and Evidence on Ordinary Level of Skill.

The § 103 rejections are all based on what “would have been obvious to a person of ordinary skill in the art (Paper No. 22, pp. 3, 4, 5). But there are no findings on what is the ordinary level of skill in the pertinent art. Also, there is no record evidence as to the ordinary level of skill in the pertinent art. There is not even a mention of what is the pertinent art.

In *In re Dembicza*k, 175 F.3d 994, 50 USPQ2d 1614 (Fed. Cir. 1999), the Federal Circuit overturned an obviousness rejection by the Board because of its failure to make the kind of obviousness legal analysis commanded in *Graham v. John Deere Co.*, 376 U.S. 1, 17-18 (1966). Such a legal analysis must begin with making specific findings of fact regarding the level of ordinary skill in the art. See also *In re Mayne*, 104 F.3d 1339, 1341, 41 USPQ2d 1451, 1453 (Fed. Cir. 1997);

In re Huang, 100 F.3d 135, 138, 40 USPQ2d 1685, 1688 (Fed. Cir. 1996). The Federal Circuit said in *Dembiczak* (175 F.3d at 1000-01, 50 USPQ2d at 1618):

The Commissioner of Patents and Trademarks (“Commissioner”) attempts to justify the Board’s decision on grounds different from that relied upon by the Board, arguing that one of ordinary skill in the art would have been motivated to combine the references. Of course, in order to do so, the Commissioner must do what the Board did not do below: make specific findings of fact regarding the level of skill in the art (“a designer and manufacturer of trash and leaf bags, particularly one specializing in the ornamental and graphic design of such bags”)

See also *In re Kaplan*, 789 F.2d 1574, 1580, 229 USPQ 678, 683 (Fed. Cir. 1986) (“Even if obviousness of the variation is predicated on the level of skill in the art, prior art evidence is needed to show what that level of skill was.”). Thus, this Final Rejection lacks evidence and findings that the Federal Circuit considers essential to support a rejection.

C. The Principal Reference Teaches Away From the Invention.

Yumibe, the principal reference, teaches use of a new kind of connector instead of the traditional type of connector. Yumibe begins by describing conventional connectors and their shortcomings and drawbacks (col. 1, line 50, to col. 2, line 18). Then, Yumibe describes his improved connector 10, and variations 10' and 10" on it (cols. 4-6).

In contrast, the instant invention teaches use of the traditional connectors which Yumibe rejects, but teaches using them in duplicate, parallel sets. An artisan reading the Yumibe patent would be instructed not to use a conventional connector, or two sets of them as Lee does, but to use the new Yumibe connector instead. Yumibe does not just extol the superiority of his new connector. Yumibe says, "Do not use a conventional connector. Use my better one instead!"

Lee argued below that Yumibe teaches away from the invention. The Examining Staff maintained that Yumibe merely extolled the superiority of his connector and did not teach away from using an adaptation of the prior art connector. The Examining Staff argued that *In re Dance*, 160 F.3d 1339, 1343-44, 48 USPQ2d 1635, 1638 (Fed. Cir. 1998), supports this concept of what is and what is not "teaching away."

First, the *Dance* case on which the Examining Staff seeks to rely, holds that a teaching of one species method of addressing a problem (emulsification of debris to get rid of it) does not teach away from a second species such method (recovery and removal of debris to get rid of it), simply because the reference "extols the simplicity of its structure" over that of other members of the same genus. *Dance* says the reference must do more. It must convey the idea that using the deprecated

structure will not lead to success in accomplishing the desired objective.

Here, that is just what Yumibe does. He indicates that you should give up the use of conventional connectors in favor of his completely different new approach. Thus, Yumibe does teach away from Lee's use of a pair of conventional connectors that Lee adapts for use in the instant invention by placing them in a parallel configuration.

IX. CONCLUSION

In view of the law and facts stated herein as well as all the foregoing reasons, Appellant believes that the rejection is improper and respectfully requests that the Board refuse to sustain the outstanding rejection of claims 1 through 8 and 9 through 18 under 35 U.S.C. §103.

Respectfully submitted,



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X. APPENDIX I

CLAIMS UNDER APPEAL (1-8, 10-18)

1 1. (Thrice Amended) A hard disk drive, comprising:

2 a disk assembly, comprising:

3 a body;

4 a spindle motor supported by said body;

5 a first connector attached to said body;

6 a first printed circuit board attached to said body and connected to said

7 spindle motor; and

8 a plurality of contacts mounted on said first printed circuit board;

9 a second printed circuit board, comprising:

10 a second connector engageable with said first connector of said disk

11 assembly while said second printed circuit board is attached to said disk assembly;

12 and

13 a third connector having a plurality of terminals attached to said second

14 printed circuit board, said plurality of terminals of said third connector of said

15 second printed circuit board automatically electrically engaging said contacts on

16 said disk assembly to transfer signals between said second printed circuit board and

17 said spindle motor when said second connector of said second printed circuit board
18 is engaged with said first connector of said disk assembly.

1 2. (Twice Amended) The hard disk drive of claim 1, further comprised of
2 said plurality of terminals of said third connector being formed of an elastic
3 material.

1 3. (Twice Amended) The hard disk drive of claim 2, further comprised
2 of said first printed circuit board attached to said disk assembly being flexible.

1 4. (Twice Amended) The hard disk drive of claim 3, each one of said
2 plurality of terminals of said third connector being P-shaped.

1 5. (Twice Amended) The hard disk drive of claim 3, each one of said
2 plurality of terminals of said third connector being C-shaped.

1 6. (Twice Amended) A hard disk drive, comprising:
2 a disk assembly, comprising:

3 a body;

4 a spindle motor disposed on said body;

5 a first connector attached to said body;

6 a first printed circuit board disposed on said body and electrically connected

7 to said spindle motor; and

8 a plurality of contacts mounted on said first printed circuit board; and

9 a second printed circuit board comprising;

10 a base;

11 a second connector attached to said base; and

12 a plurality of terminals attached to said base and protruding to automatically

13 abuttingly contact said contacts on said disk assembly while said first connector is

14 engaged with said second connector.

1 7. (Amended) The hard disk drive of claim 6, further comprised of said

2 terminals being formed of a flexible material.

1 8. (Twice Amended) The hard disk drive of claim 7, wherein said first

2 printed circuit board is a flexible printed circuit board, said first printed circuit

3 board being attached to said disk assembly.

10. (Amended) The hard disk drive of claim 7, further comprised of said
1 terminals being P-shaped.

11. (Amended) The hard disk drive of claim 7, further comprised of said
2 terminals being C-shaped.

12. (Amended) A hard disk drive, comprising:
2 a disk assembly, comprising:
3 a body;
4 a spindle motor disposed on said body;
5 a first connector attached to said body;
6 a flexible printed circuit board disposed on said body and electrically
7 connected to said spindle motor; and
8 a plurality of contacts mounted on said printed circuit board; and
9 a printed circuit board assembly comprising;
10 a base;

11 a second connector attached to said base; and

12 a plurality of elastic terminals attached to said base and protruding to
13 automatically abuttingly contact said contacts on said disk assembly while said first
14 connector is engaged with said second connector.

1 13. The hard drive of claim 12, further comprised of said terminals being

2 C-shaped.

1 14. The hard drive of claim 12, further comprised of said terminals being

2 P-shaped.

1 15. The hard disk drive of claim 12, further comprised of said terminals

2 being hook shaped.

1 16. The hard disk drive of claim 12, further comprised of said terminals

2 being V-shaped.

1 17. The hard disk drive of claim 12, further comprised of said first

2 connector and said second connector each being a 14 pin type of connector.

1 18. The hard disk drive of claim 12, further comprised of said contacts
2 and said terminals each being a 4 pin type of connector.

X. APPENDIX II

CLAIMS UNDER APPEAL (1-8, 10-18)

1 1. (Four times Amended) A hard disk drive, comprising:

2 a head/disk assembly, comprising:

3 a body; and

4 a spindle motor supported by said body;

5 a first connector attached to said body;

6 a first printed circuit board attached to said body and connected to said

7 spindle motor, [; and] a plurality of contacts mounted on said first printed circuit

8 board;

9 a second printed circuit board, comprising[:] a second connector engageable

10 with said first connector of said disk assembly while said second printed circuit

11 board is attached to said disk assembly; and

12 a third connector having a plurality of terminals attached to said second

13 printed circuit board, said plurality of terminals of said third connector of said

14 second printed circuit board automatically electrically engaging said contacts on

15 said disk assembly to transfer signals between said second printed circuit board and

16 said spindle motor when said second connector of said second printed circuit board
17 is engaged with said first connector of said disk assembly.

1 2. (Twice Amended) The hard disk drive of claim 1, further comprised of
2 said plurality of terminals of said third connector being formed of an elastic
3 material.

1 3. (Twice Amended) The hard disk drive of claim 2, further comprised
2 of said first printed circuit board attached to said disk assembly being flexible.

1 4. (Twice Amended) The hard disk drive of claim 3, each one of said
2 plurality of terminals of said third connector being P-shaped.

1 5. (Twice Amended) The hard disk drive of claim 3, each one of said
2 plurality of terminals of said third connector being C-shaped.

1 6. (Thrice Amended) A hard disk drive, comprising:
2 a head/disk assembly, comprising:

3 a body; and

4 a spindle motor disposed on said body;

5 a first connector attached to said body;

6 a first printed circuit board disposed on said body and electrically connected

7 to said spindle motor; [; and] a plurality of contacts mounted on said first printed

8 circuit board; and

9 a second printed circuit board comprising;

10 a base;

11 a second connector attached to said base; and

12 a plurality of terminals attached to said base and protruding to automatically

13 abuttingly contact said contacts on said disk assembly while said first connector is

14 engaged with said second connector.

1 7. (Amended) The hard disk drive of claim 6, further comprised of said

2 terminals being formed of a flexible material.

1 8. (Twice Amended) The hard disk drive of claim 7, wherein said first

2 printed circuit board is a flexible printed circuit board, said first printed circuit

3 board being attached to said disk assembly.

1 10. (Amended) The hard disk drive of claim 7, further comprised of said
2 terminals being P-shaped.

1 11. (Amended) The hard disk drive of claim 7, further comprised of said
2 terminals being C-shaped.

1 12. (Twice Amended) A hard disk drive, comprising:
2 a head/disk assembly, comprising:
3 a body; and
4 a spindle motor disposed on said body;
5 a first connector attached to said body;
6 a flexible printed circuit board disposed on said body and electrically
7 connected to said spindle motor, [; and] a plurality of contacts mounted on said
8 printed circuit board; and
9 a printed circuit board assembly comprising;
10 a base;

11 a second connector attached to said base; and

12 a plurality of elastic terminals attached to said base and protruding to
13 automatically abuttingly contact said contacts on said disk assembly while said first
14 connector is engaged with said second connector.

1 13. The hard drive of claim 12, further comprised of said terminals being

2 C-shaped.

1 14. The hard drive of claim 12, further comprised of said terminals being

2 P-shaped.

1 15. The hard disk drive of claim 12, further comprised of said terminals

2 being hook shaped.

1 16. The hard disk drive of claim 12, further comprised of said terminals

2 being V-shaped.

1 17. The hard disk drive of claim 12, further comprised of said first

2 connector and said second connector each being a 14 pin type of connector.

1 18. The hard disk drive of claim 12, further comprised of said contacts
2 and said terminals each being a 4 pin type of connector.